



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,384	12/27/2000	Akira Oosawa	Q61247	3796

7590 09/09/2005

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3202

EXAMINER
----------

TABATABAI, ABOLFAZL

ART UNIT	PAPER NUMBER
----------	--------------

2625

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/748,384

Applicant(s)

OOSAWA, AKIRA

Examiner

Abolfazl Tabatabai

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **Request for Continued Examination**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 3, 2005, has been entered.

## **Claim Rejections - 35 USC § 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

3. Claims 1,7-10,13-15, 22, 23, 26, 28, 32-34, 38-40 and 47-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Branson (U S 5,740,801).

Regarding claim 1, Branson discloses image-processing apparatus comprising the steps of:

performing inter-image processing on two original images (column 12, line 16) constituting each of two or more pairs of original images selected from three or more original images taken of the same subject (column 15, lines 38-43), which become objects of comparison and reading (column 6, lines 3-8; column 11, lines 51-54 and column 14, lines 29-30).

arranging, or switching in sequence (column 3, lines 9-10), and displaying two or more inter-image processed images generated by said inter-image processing (column 16, lines 64-67 and column 18, lines 33-55).

Regarding claim 7, Branson discloses the image display method as set forth in claim 2, wherein said two original images is selected as a reference image so that each of said inter-image-processed images is generated based on said image (column 15, lines 38-43).

Claims 8-10, and 32 are similarly analyzed as claim 7.

Regarding claim 13, Branson discloses the image display method as set forth in claim 1, wherein said inter-image processing is the process of performing subtraction between corresponding pixels in said two original images (column 15, lines 55-64).

Claims 14,15 are similarly analyzed as claim 13.

Claim 22, is similarly analyzed as claim 1.

Regarding claim 23, Branson discloses the image display method as set forth in claim 1, wherein said three or more images are medical radiation images (column 10, lines 8-10).

Regarding claim 26, Branson discloses image-processing apparatus comprising the steps of:

Image display means (fig. 1 element 18);

Inter-image processing means for performing inter-image processing on two original images (column 12, line 16) constituting each of two or more pairs of original images selected from three or more original images taken of the same subject (column

Art Unit: 2625

15, lines 38-43), which become objects of comparison and reading (column 6, lines 3-8; column 11, lines 51-54 and column 14, lines 29-30).

display-format setting means for causing said image display means to arrange (column 12, lines 46-48; column 16, lines 64-67 and column 17, lines 1-6), or switch in sequence, and displaying two or more inter-image processed images obtained by said inter-image processing means (column 16, lines 64-67 and column 18, lines 33-55).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use display-format setting means for causing said image display means to arranging, or witching in sequence, and displaying two or more inter-image processed as taught by Branson in the system of Some because Branson provides Some an improved system which performs a zooming function for increasing size of images on the output device and reduces interlaced noise on an interlaced video display device by reducing motion artifacts due to motion that occurs between acquisition of field of video that comprise a video frame.

Claim 38 is similarly analyzed as claim 13.

Claim 47, is similarly analyzed as claim 22.

Claim 48, is similarly analyzed as claim 23.

Claims 49-52 are similarly analyzed as claims 1 and 26 above.

Regarding claim 53, Branson discloses the image display of claim 1, wherein the inter-image processing is automated (column 19, lines 19-27).

Claim 54, is similarly analyzed as claim 53.

Claim 55, is similarly analyzed as claim 1.

Claim 56, is similarly analyzed as claim 10.

4. Claims 11 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Branson (U S 5,740,801) in view of Ishihara et al (5,241,473).

Regarding claim 11, Branson is silent about the specific details regarding three or more original images are acquired in sequence in a time series manner, and said reference image is the newest or oldest in a time series.

In the same field of endeavor (medical filed), however, Ishihara discloses a system for tracking motion in MR images comprising three or more original images are acquired in sequence in a time series manner, and said reference image is the newest or oldest in a time series (column 3, lines 34-38; column 12, lines 65-68; column 13, lines 1-8 and 26-36).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use reference image as taught by Ishihara in the system of Branson because Ishihara provides Branson an improved system in which the foregoing problems are solved in which movement of moving portion of patient's body such as a heart of blood vessels are depicted with colored differential images and display in a time series of the moving portion of the patient's body on a scope is produced, and is further possible to discriminate timing of the images relative to a biosignal of the patient.

Claim 36, is similarly analyzed as claim 11.

Claim 57, is similarly analyzed as claim 11.

Art Unit: 2625

5. Claims 2-6,12, 16-21,24-25, 27,29-31,35-37 and 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Branson (U S 5,740,801) in view of Gupta et al (6,292,683 B1).

Regarding claim 2, Branson is silent about the specific details regarding the image display method wherein said two or more inter-image-processed images are arranged in a manner in which display positions of structurally characteristic parts of said subject in said two or more inter-image-processed images are aligned.

In the same field of endeavor, however, Gupta discloses a system for tracking motion in MR images comprising the image display method wherein said two or more inter-image-processed images are arranged in a manner in which display positions of structurally characteristic parts of said subject in said two or more inter-image-processed images are aligned (column 6, lines 29-39 and column 9, lines 51-59).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use alignment as taught by Gupta in the system of Branson. Because Gupta provides Branson an improved system to track movement in MR images that solves the aforementioned problems. In one application, an automatic image registration algorithm is proposed which greatly reduces the time required for analyzing MR studies and improves the accuracy of signal intensity analysis. This automatic image registration system is particularly advantageous in myocardial perfusion imaging, coronary artery imaging diffusion system, and medical instrument tracking in an interventional procedure.

Regarding claim 3, Branson is silent about the specific details regarding the image display method as set forth in claim 1, wherein said two or more inter-image-processed images are switched in sequence in a manner in which display positions of structurally characteristic parts of said subject in said two or more inter-image-processed images are registered.

In the same field of endeavor, however, Gupta discloses a system for tracking motion in MR images comprising two or more inter-image-processed images are switched in sequence in a manner in which display positions of structurally characteristic parts of said subject in said two or more inter-image-processed images are registered (column 4, lines 17-26 and column 6, lines 25-56).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use registered images as taught by Gupta in the system of Branson, because Gupta provides Branson an improved system to track movement in MR images that solves the aforementioned problems. In one application, an automatic image registration algorithm is proposed which greatly reduces the time required for analyzing MR studies and improves the accuracy of signal intensity analysis. This automatic image registration system is particularly advantageous in myocardial perfusion imaging, coronary artery imaging diffusion system, and medical instrument tracking in an interventional procedure.

Regarding claim 4, Branson is silent about the specific details regarding three or more original images are taken in sequence in a time series manner.



Art Unit: 2625

In the same field of endeavor, however, Gupta discloses a system for tracking motion in MR images comprising three or more original images are taken in sequence in a time series manner (column 3, lines 27-33 and column 6, lines 29-39).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use time series manner as taught by Gupta in the system of Branson because Gupta provides Branson an improved system to track movement in MR images that solves the aforementioned problems. In one application, an automatic image registration algorithm is proposed which greatly reduces the time required for analyzing MR studies and improves the accuracy of signal intensity analysis. This automatic image registration system is particularly advantageous in myocardial perfusion imaging, coronary artery imaging diffusion system, and medical instrument tracking in an interventional procedure.

Claims 5, 6 and 12 are similarly analyzed as claim 4.

Regarding claim 16, Branson are silent about the specific details regarding inter-image processing is the process of registering positions of structural elements of said two original images.

In the same field of endeavor, however, Gupta discloses a system for tracking motion in MR images comprising inter-image processing is the process of registering positions of structural elements of said two original images (column 4, lines 20-26 and column 6, lines 29-39).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use registering positions as taught by Gupta in the system of

Branson because Gupta provides Branson a system to track movement in MR images that solves the aforementioned problems. In one application, an automatic image registration algorithm is proposed which greatly reduces the time required for analyzing MR studies and improves the accuracy of signal intensity analysis. This automatic image registration system is particularly advantageous in myocardial perfusion imaging, coronary artery imaging diffusion system, and medical instrument tracking in an interventional procedure.

Claims 17-21 are similarly analyzed as claim 16.

Claims 24 and 25 are similarly analyzed as claim 12.

Claim 27, is similarly analyzed as claim 2.

Claim 28, is similarly analyzed as claim 3.

Claims 29-31, 36-37 are similarly analyzed as claim 4.

Claim 34, is similarly analyzed as claim 28.

Claim 35, is similarly analyzed as claim 29.

Claim 37, is similarly analyzed as claim 25.

Claims 41-46 are similarly analyzed as claim 16.

### **Other prior art Cited**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Taniguchi (U S 5,578,823) discloses a transmission electron microscope and method of observing element distribution by using the same.

Fujii et al (U S 5,594,768) disclose a laminograph and inspection and repair device using the same

Ishihara et al (U S 6,110,123) disclose a region of interest setting apparatus for respiration monitoring and a respiration monitoring system.

Yonekawa (U S 6,504,897 B1) disclose a X-ray image radiographing system.

### **Contact Information**

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (571) 272-7458.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (571) 272-7453. The fax phone number for organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/748,384  
Art Unit: 2625

Page 11

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

September 2, 2005

*A-Tabatabai*

  
KANJI BHAI PATEL  
PRIMARY EXAMINER